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Div. of Oil, Gas & Mining

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DIVISION OF WATER QUALITY
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Director

AUG 12 2014

Chris Kaiser
Manager - Environment
Rio Tinto Kennecott Copper
4700 Daybreak Parkway
South Jordan, Utah 84095

Subject: Upper Clay Hollow Drainage Channel (Phase II) Impacted Material Removal Work Plan Dated July 18, 2014

Dear Mr. Kaiser:

The following comments are submitted by the Division of Water Quality (DWQ) and the Division of Environmental Response and Remediation (DERR) in response to the above-referenced Phase II work plan from Rio Tinto Kennecott Copper on behalf of Rio Tinto Barneys Canyon.

General Comments:

1) The regulatory agencies are in agreement that this work plan shall be prepared to fully delineate the source, extent, and contaminants of concern (COC) of the Clay Hollow drainage cleanup. Further activities regarding the Clay Hollow project shall not be deferred to a "Phase III" work plan. Contaminant investigation and removal activities for the remainder of the Barneys Canyon Mine Property, if necessary, should be presented under the final mine closure plan submitted independent of the Clay Hollow cleanup action.

2) Rio Tinto Barneys Canyon (RTBC) or Rio Tinto Kennecott Copper (RTKC, on behalf of RTBC) is requested to delineate the source of the sediment (with elevated arsenic and thallium) released into the Clay Hollow drainage in a revision of the referenced response action work plan. The source of the released material is pertinent to the assessment of the completeness of the response action.

3) In accordance with Ground Water Discharge Permit UGW350001, a final closure plan is required twelve months prior to the end of operations. Since the buttress construction proposed for the base of leach pads #3 and #5 will initiate the final leach pad cover, engineering design drawings must first be submitted for review and approval. These

engineering plans may be incorporated by reference when the closure plan for the entire facility is submitted for review and approval.

4) At this time the Agencies (DWQ and DOGM) request that RTBC bifurcate the response work taking place in the Clay Hollow drainage from the overall closure of the Barneys Canyon Gold Mine. Upon so doing, the construction, use and management during and after the removal action of the proposed disposal location(s) should be detailed sufficiently in the referenced response action work plan to detail how during and after the work the removed sediment will be permanently sequestered in the disposal location(s) in perpetuity.

Specific Comments:

1) Section 1, 2nd paragraph, page 1-1: The sampling activities and locations that lead to the discovery of the sediment release in Clay Hollow, including the analyte list, should be presented.

2) Section 1, 3rd paragraph, Figure 1-4, page 1-1: Delete reference to "Phase III" and remove the green outline. The scope of the Clay Hollow drainage cleanup should be defined by actual field sampling data, not a property outline unrelated to the extent of contamination. Sampling, investigation, and clean-up activities unrelated to the Clay Hollow incident should be presented as independent projects or as part of the final closure plan.

3) Figure 1-4: RTBC (or RTKC on their behalf) is requested to revise the figure to remove the reference to a Phase III of the Clay Hollow response work. The delineated boundary of response work (to be shown on Figure 1-4) to address Clay Hollow should include the proposed disposal location(s), referenced as "repositories" by RTBC in the work plan for the sediment removed from the Clay Hollow drainage segments No. 2 through No. 4.

4) Section 2, page 2-1: Along with delineating the source of the sediment with elevated arsenic and thallium, RTBC (or RTKC on their behalf) is requested to delineate the use, closure, and management in-perpetuity of the repositories that will be used to store the sediments with elevated arsenic and thallium removed from the Clay Hollow drainage. The agencies recognize that RTKC proposed to have the delineated use, closure and management of the disposal locations covered under a work plan for Phase III, however this work plan can provide said information which can later be referenced or replicated in the separate work plan provided for the closure of the Barney Canyon Gold Mine facility.

5) Figure 2-1: The segments of the Clay Hollow drainage requiring removal action are delineated on Figure 2-1 in orange color. RTBC (or RTKC on their behalf) is requested to provide sampling data that has been collected which characterizes those areas of the Clay Hollow drainage where removal action has not been proposed (especially the hill side located just north of BC-5). Without such information presented, there is no officially documented evidence that demonstrates non-colored areas are in compliance with proposed action levels.

6) Section 2.2, 1st paragraph, page 2-4: Describe how material from the source area (upstream) will be prevented from remobilizing into the Clay Hollow channel as remediation activities proceed downstream. Present a sampling plan that will document the previously remediated downstream areas remain free of contaminants following remediation of the upstream source area.

7) Section 2.2, 3rd paragraph, page 2-4: Delete reference to Zone 4 in Table 2-1 and on Figure 2-4. Zone 3 represents the perimeter of the leach pad containment area. Any contact storm water or contaminated sediment within Zone 4 is outside the boundaries of an engineered containment system and requires removal as part of this cleanup project.

8) Section 2.2, 2nd bullet under Optimizing and Minimizing Impact of Removal Work, page 2-5: It states, "It is also understood that all removed sediment will be hauled off-site". The portions of the Clay Hollow drainage being addressed under this work plan are on RTKC and RTBC property, as is the proposed disposal location(s). RTBC (or RTKC on their behalf) is requested to revise the bullet to remove the statement that the removed sediment is being hauled "off-site" and to state the sediment is being hauled to the proposed disposal location(s).

9) Section 2.4, page 2-7: For inspection purposes, the regulatory agencies must be informed before additional excavation activities are conducted if confirmation samples exceed action levels.

10) Section 3, last paragraph, page 3-2: Revise this paragraph in accordance with comment response #24 of the previous work plan. The commitment was to conduct XRF screening along the drainage channel throughout the West Jordan property and collect a laboratory sample from the location with the highest XRF reading.

11) Section 4, 2nd paragraph, last sentence, page 4-1: Please be advised that the referenced work plan does not directly pertain to the response action implemented on Segment #1 of the Clay Hollow Drainage (i.e. West Jordan property). Please revise the sentence to remove the reference to the West Jordan property.

12) Section 5, 4th & 5th paragraphs, page 5-2: Please separate the 4th and 5th paragraphs.

13) Section 5, 8th paragraph, page 5-2: Please state that even though the XRF instrument will be used for field soil screening purposes, it will still be calibrated pursuant to the manufacturer's specifications each day.

14) Appendix A: A review of the lab certificates and quality assurance reports for the pre-removal characterization samples found that not a single quality assurance sample analyzed by Rio Tinto Kennecott Environmental Laboratory (RTKEL) was analyzed for thallium. Thus, there are no quality assurance assessments for the thallium data set. Furthermore, some of the certificates of analysis note that thallium is reported for

"informational purposes only". As thallium is a contaminant of concern it is not being reported for informational purposes only, it is relevant to decisions. Please ensure that the primary and secondary labs (throughout the whole project, i.e. Phase I and II), quality assurance programs are analyzing quality assurance samples for thallium. Since decisions will be made against the thallium as much as the arsenic data set, the quality of both needs to be assessed.

15) Section 5 and Appendix B – Section 5: Section 5 of the response action work plan and Section 5 of Appendix B are exactly the same except for the following sentences in the 1st paragraph in Section 5 of the response action work plan:

"This section discusses the general QA/QC requirements and procedures for the project. A more complete discussion is included in the Sampling and Analysis Plan included in Appendix B."

Section 5 of Appendix B was not found to be more complete than Section 5 of the overall response action work plan. Section 5 of Appendix B was found to be less complete than the overall response action work plan because it is missing the table which lists the data quality objectives for both the primary and secondary labs. RTBC (or RTKC on their behalf) is requested to consider revising Section 5 of the overall response action work plan to make it more general and to direct readers to Appendix B for more detail, or to ensure that at each occurrence the quality assurance procedures are replicated consistently (i.e. all narratives and tables are replicated consistently).

16) Appendix B, Section 6, 1st paragraph, 1st sentence, page 6-1: It is stated that the data generated from the sampling associated with this "Site Investigation Plan" will be reviewed. Please note, the term "Site Investigation Plan" is not defined anywhere. The overall response action work plan is referenced as the "...Removal Work Plan" in the title. Appendix B is listed as the "...Sampling and Analysis Plan" in its title. Please revise the term "Site Investigation Plan" by removing the capital letters or placing the correct document title in the referenced sentence.

17) Appendix B, Section 6, 3rd paragraph, page 6-1: The paragraph was found to reference the quality assurance section of Appendix B, which is Section 5. However, the reference provided for the table containing the data quality objectives for both the primary and secondary labs (i.e. Table 6-1) is wrong. Please revise.

18) Appendix B, Section 7, page 7-1: Please explain the purpose for Section 7. All statements made in Section 7 are previously stated or paraphrased in Section 5 of the overall response action work plan, Section 5 of Appendix B and in part Section 6 of Appendix B. Please remove Section 7.

19) Appendix C, Section 6, page 4: It is noted that as part of the decontamination procedures a track out pad will be constructed between "the access point into the disposal area and the haul road". Please note a track out pad for the ingress/egress location for all excavation zones should also be constructed. RTBC (or RTKC on their behalf) is requested to

document that track out pads will be located at both the ingress/egress points to the excavation zones and the disposal location.

20) Appendix C, Section 8, 2nd paragraph, page 4: Section 8 references that all air samples will be collected and analyzed according to the NIOSH and OSHA methods and directs the reader to refer to Appendix C of the work plan (which is assumed to mean the overall response action work plan). The reference to Appendix C is back onto the same document it is listed in. The agencies note, Appendix D contains the Air Monitoring Plan which in part covers the analysis of collected air quality samples. Please revise the reference to Appendix C in Section 8 to refer to Appendix D (if appropriate) or provide the correct reference.

21) Appendix C, Section 12, page 6-7: It is noted that Section 12 is not complete. There are no names or phone numbers listed for key personnel.

22) Appendix D, Section 2, Table 1, page 2: Under the third column entitled "Standard 29CFR1910", for Total Dust there is a reference to table Z-3 and for Thallium there is a reference to table Z-1. First, the agencies are left to assume that both Table Z-3 and Z-1 are provided under the listed CFR. Please explain why there is not a concentration standard listed in Table 1 for Total Dust and Thallium and why a reference to another table under the CFR is provided in place of the concentration standard. Please provide the unit of measure for the arsenic concentration standard under 29CFR1910.

23) Appendix E, Section 7, page 1: It is noted that Section 7 is not complete. There are no names or phone numbers listed for the noted positions.

Please contact Brian Hamos (801) 536-4384 or Doug Bacon (801) 536-4282 if you have any questions regarding this matter.

Sincerely,

Dan Hall

Dan Hall, P.G., Manager
Ground Water Protection Section

DH:BH:pe

cc: Douglas Bacon, DERR (via e-mail)
Leslie Heppler, DOGM (via e-mail)
Paul Baker, DOGM (via e-mail)
Mike Bradley, DOGM (via e-mail)
Rocky Stonestreet, DSHW (via e-mail)
Kerri Fiedler, EPA Region 8 (via e-mail)
Thiess Lindsay, Rio Tinto Kennecott Copper (via e-mail)
John Hoggan, Salt Lake County Health Department (via e-mail)
Wendell Rigby, City of West Jordan (via e-mail)

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